REMARKS

Upon entry of this amendment, claims 1, 4-10, 12-16, 18-20 and 58, 61-85 will be pending in the application, of which claims 1, 4-6, 12, 16, 18, 20, 58, 61-63, 65, 67, 70, 72, 73, 74, 77, 78, 81, 82 and 85 being amended. Claims 2, 3, 11, 17, 59, 60, 66 are being canceled.

Claims 1, 12, 58, 65, 70, 74, 78, and 82 are being amended to recite that the coating comprises a diamond-like carbon material. These amendments are supported at least by original claims 2 and 3. Claims 4-6, 16, 18, 20, 61-63, 67, 72, 73, 77, 82 and 85 are being amended to provide proper antecedent basis. Entry of the amendments is respectfully requested because the claim amendments are fully supported by the original claims and Specification, and add no new matter.

At least claim 11 is being canceled, as drawn to an unelected invention, and without prejudice or disclaimer.

Applicant thanks the Examiner for withdrawing the prior rejection based on the Parkhe et al. and Boyd et al. references, on the basis of the previously submitted Declaration under 37 CFR 1.132.

However, the Office Action made a new set of rejections in a second non-final office action. Applicant respectfully traverses these rejections and requests reconsideration of the pending claims on the basis of the arguments provided below.

Section 103 Rejections

1. Claims 1-3, 7-10, 12-15, 17, 65-66 and 68-69 were rejected under 35 USC 103(a) as being unpatentable over US patent number 5,583,736 to Andersen et al., in view of US patent number 7,160,616 to Massler et al..

Applicant respectfully traverses this rejection because claim 1 is patentable under 35 U.S.C. 103(a) over Anderson et al. in view of Massler et al., because the cited combination does not establish a *prima facie* case of obviousness under 35 U.S.C. 103(a). To establish a *prima facie* obviousness:

(A) The claimed invention must be considered as a whole;

(B) The references must be considered as a whole and must suggest the desirability and thus the obviousness of making the combination;

(C) The references must be viewed without the benefit of impermissible hindsight vision afforded by the claimed invention; and

(D) Reasonable expectation of success is the standard with which obviousness is determined.

Hodosh v. Block Drug Co., Inc., 786 F.2d 1136, 1143 n.5, 229 USPQ 182, 187 n.5 (Fed. Cir. 1986).

<u>Claim 1</u>:

1. <u>The Office Action Is Not Considering the Claimed Invention As a Whole.</u>

To establish obviousness, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). "All words in a claim must be considered in judging the patentability of that claim against the prior art." *In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970). In determining the differences between the prior art and the claims, the question under 35 U.S.C. 103 is not whether the differences <u>themselves</u> would have been obvious, but

whether the claimed invention as a whole would have been obvious. *Stratoflex, Inc. v. Aeroquip Corp.*, 713 F. 2d 1530, 218 USPQ 871 (Fed. Cir. 1983).

Anderson et al. in view of Massler et al. does not teach claim 1, which is to a substrate support comprising (a) a support structure; and (b) a coating on the support structure, the coating comprising a diamond-like carbon material having a carbon-hydrogen network, and the coating having a contact surface comprising a coefficient of friction of less than about 0.3 and a hardness of at least about 8 GPa, whereby the contact surface of the coating is capable of reducing abrasion and contamination of a substrate that contacts the contact surface.

Anderson et al. teaches "an electrostatic chuck [which] is faced with a pattern silicon plate 11, created by micro-machining a silicon wafer, which is attached to a metallic baseplate 13." (Abstract). Anderson et al. further teaches that the patterned silicon plate 11 comprises islands 19. Anderson et al. also teaches that this electrostatic chuck provides good wear resistance, low abrasion, short de-chucking time, and allows lower voltages to be applied to the chuck. (Column 3, lines 20-34).

However, Andersen et al. does not teach a coating comprising a diamond-like carbon material having a carbon-hydrogen network, on a substrate support structure, or the advantages obtained from such a coated substrate support. Nor does Andersen et al. teach a coating having a contact surface comprising a coefficient of friction of less than about 0.3 and a hardness of at least about 8 GPa. Thus, Andersen et al. does not teach claim 1 as a whole

Massler et al. does not make up for the deficiencies of Anderson et al., because Massler et al. teaches a DLC coating on a substrate without specifying the nature of the substrate or its application. As acknowledged by the Examiner, Massler et al. simply does not teach or suggest application of a DLC layer to a substrate support structure. As explained in the present specification, the substrate support structure

comprises:

> In the substrate processing methods, substrates 104 are transported and held by various support components 20. For example, a substrate 104 may be held during processing in a chamber 106 on a support component 20 that is a substrate support 100, and which has an a support structure 25 that can also serve as an electrostatic chuck 102 as shown in Figure 1. The substrate 104 may also be supported by a support component 20 comprising a support structure 25 that is a heat exchange pedestal 150, such as a heating pedestal 151 or cooling pedestal 152, as illustrated in Figures 2a and 2b, that is used to degas a substrate 104 by heating it, or to cool a substrate 104 after a high temperature process. Further types of support components 20 include support structures 25 suitable for transporting the substrate, such as lift pins 160 as shown in Figure 3, and robotic arms having robot blades, can be used to place and remove substrates 104 on supports 100, as well as to transfer substrates 104 between chambers 106 in a multi-chamber apparatus 101. Yet another support component 20 is a shutter disk 180, as shown in Figure 4, to cover a portion of the substrate support 100 when the substrate 104 is not present during a chamber cleaning process.

(Specification, page 7, lines 3-18). These structures are not taught or suggested by Massler et al..

Further, neither Anderson et al. nor Massler et al. teach or suggest claim 1 as a whole because neither reference teaches that a DLC coating on a support structure, which has a coefficient of friction of less than about 0.3 and a hardness of at least about 8 GPa, or the advantages and benefits of applying such a coating on a substrate support. Furthermore, and as acknowledged by the Examiner, neither Andersen et al. nor Massler et al. teach a coating comprising a diamond-like carbon material having a carbon-hydrogen network, on a substrate support. For these reasons, the combination of Anderson et al. and Massler et al. do not teach or suggest claim 1 as a whole, or its dependent claims.

2. <u>The Anderson et al. and Massler et al. References When Considered as a Whole Do Not Suggest the Desirability, and thus the Obviousness, of the Suggested Combination</u>.

To establish a prima facie case of obviousness, there must be some suggestion of the desirability, or motivation to derive, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to combine the reference teachings. *In re Vaeck*, 947 F.2d 488 (Fed. Cir. 1991). See also MPEP § 2143 - § 2143.03 for decisions pertinent to each of these criteria.

The Office Action has not demonstrated that there is any motivation to apply the DLC coating taught by Massler et al. to the support structure taught by Anderson et al. to meet the limitations of claim 1. Anderson et al. teaches that a patterned silicon layer having islands provides good wear and abrasive properties for a substrate support. However, it is well-known that silicon has a hardness which is much softer than a DLC coating which has high hardness values. Silicon and DLC coatings also have different coefficients of friction. Thus one of ordinary skill in the art upon learning from Anderson et al. that patterned silicon islands provides desirable wear and abrasion resistance properties, would not be motivated to substitute the soft silicon coating with an extremely hard diamond-like coating as taught by Massler et al.. Clearly, knowledge of the substitution must have been obtained in hindsight and based on Applicant's own disclosure.

Moreover, as explained in the Specification, the claimed substrate support structure and coating provide novel advantages and benefits that arise from the combination of the selected coefficient of friction and hardness values of the coating, when such a coating is applied to a substrate support structure:

> The processing yields of substrates 104 is substantially improved with support components 20 having contact surfaces 22 capable of reducing, and even eliminating, the formation and/or deposition of contaminant residues that arise from frictional and

abrasive forces between the contact surface 22 of the support component 20 and the substrate 104. For example, when the component 20 is made from a metal containing material, metal contaminant particles deposit on the substrate 104 when the substrate 104 rubs against the contact surface 22 of the support component 20. It has been found that the frictional residues have larger particle sizes or numbers, when the contact surface 22 is excessively soft, has a high frictional coefficient causing abrasion of the surfaces, or has a high level of impurities. To reduce such contamination, the contact surfaces 22 of the support component 20 are provided with a surface coating 24 that has desirable abrasion or hardness, frictional properties, and/or low-levels of contaminants. The contamination reducing coating 24 may cover at least a portion of a surface 26 of an underlying component structure 25, as shown for example in Figure 2a, or may even cover substantially the entire surface that is in contact with the substrate 104. ...

In one version, the contamination reducing coating comprises a material having a coefficient of friction that is sufficiently low to reduce the formation and deposition of friction or abrasion resulting particulates on the substrate 104. The low-friction material can improve substrate processing yields by contacting the substrate 104 only with a low-friction material that is less likely to flake or "rub-off" the surface 22 and deposit onto the substrate 104. The low-friction material suitable for the surface 22 desirably comprises a coefficient of friction of less than about 0.3, such as from about 0.05 to about 0.2. The coefficient of friction is the ratio of the limiting frictional force to the normal contact force when moving the surface 22 relative to another surface. ...

The contamination reducing coating also desirably has a high hardness to provide better resistance to scratching and abrasion by the substrate 104. When the substrate is a relatively hard material, it is desirable for the contact surface 22 to also be composed of a material having a relatively high hardness to be less likely to generate loose particles or flakes due to scratching of the surface 22. A suitable contamination reducing coating may comprise a hardness of at least about 8 GPa, such as from about 8 Gpa to about 25 Gpa, and even at least about 10 GPa, such as from about 18 Gpa to about 25 GPa. The surface 22 desirably comprises a hardness that is selected with respect to the substrate 104 being processed. For example, the surface 22 of a component for processing a substrate 104 comprising a semiconductor wafer may have a hardness that

is different than the hardness of a surface 22 for processing a substrate 104 comprising a dielectric glass panel used for displays.

(Specification, page 7, line 24 to page 8, line 36).

These teachings to the advantages or benefits of the claimed substrate support having a diamond like carbon coating with particular properties, are not taught or suggested by Anderson et al. and Massler et al. It should be further noted that the teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in Applicant's disclosure. *In re Vaeck*, Ibid. It would appear that the Office Action is relying on Applicant's disclosure to find an expectation of success from the cited references. The mere fact that Anderson et al. and Massler et al. references <u>can</u> be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. In re Mills, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990).

3. <u>The Office Action Has Not Demonstrated That There is a Reasonable Expectation of Success for the Proposed Combination</u>.

Moreover, it is not obvious that the substitution of the soft silicon coating taught by Anderson et al. by the hard DLC coating taught by Massler et al. would produce a reasonable expectation of success of generating a desirable substrate support. The results of the claimed invention cannot be derived in hindsight using an "obvious to try" rationale based on many any possible combination of a reference that teaches a particular coating with a references that teaches a particular support structure. Thus application of a coating with a high hardness diamond-like coating to a substrate support structure to obtain a substrate support which does not excessively abrade a substrate has not been proven by the cited combination of references. As explained in the Specification, the claimed support structure with a diamond like coating have selected coefficient of friction and hardness properties which provide benefits that

are surprising in light of Andersen et al.'s teachings to soft silicon islands and negate a finding of obviousness based on the cited references. Thus the Office Action has not demonstrated that the combination of Anderson et al. and Massler et al. would be determined by one of ordinary skill to provide a coated substrate support having the desired low abrasion of substrates, while still providing good wear resistance.

For these reasons, claim 1 and its dependent claims are not obvious over Anderson et al. in view of Massler et al..

Claims 12 and 65:

Anderson et al. and Massler et al. also do not teach or suggest claims 12 or 65, or their dependent claims, because Anderson et al. and Massler et al. do not teach or suggest a substrate support comprising a dielectric covering an electrode; and a plurality of mesas on the dielectric, the mesas comprising a coating of a diamond-like carbon material over a titanium layer, as recited in claims 12 and 65.

Specifically, neither Anderson et al. or Massler et al. teach or suggest a DLC coating on a support structure comprising a dielectric covering an electrode, as recited in claims 12 and 65. Nor do the cited references teach plurality of mesas on the dielectric, the mesas comprising a coating of a diamond-like carbon material over a titanium layer. Thus the combination of Anderson et al. and Massler et al. do not teach or suggest claim 12 or 65 as a whole.

Further, the Office Action has not demonstrated that there is any motivation to apply the DLC coating taught by Massler et al. to the support structure taught by Anderson et al. to meet the limitations of claims 12 or 65. Anderson et al. teaches that a patterned silicon layer - which is much softer than a DLC coating, provides the requisite properties. DLC coatings, as taught by Massler et al. have higher high hardness values and also different coefficients of friction. Thus one of ordinary skill in the art upon learning that a relatively soft silicon coating provides the desirable wear

and abrasion resistance properties from Anderson et al., would not substitute the soft silicon coating with the hard diamond like coating taught by Massler et al.. The claimed support structure also has a plurality of mesas comprising a coating of a diamond-like carbon material over a titanium layer, and this structure is also not taught or suggested by the combination of Anderson et al. and Massler et al..

Furthermore, it is not obvious that the substitution of the soft silicon coating taught by Anderson et al. on a support structure by a hard DLC coating taught by Massler et al. would produce a reasonable expectation of success. Specifically, applying a diamond like coating with a high hardness to a substrate support structure, to obtain a substrate support having a coating which does not excessively abrade a substrate such as silicon wafer or glass panel placed on the substrate support, is not necessarily apparent from the teachings of the cited combination of references.

For these reasons, Anderson et al. and Massler et al. do not teach or suggest claim 12 and its dependent claims, or claim 65 and its dependent claims.

2. Claims 4-6, 16 and 18, 20, 58-64 and 67 were rejected under 35 USC 103(a) as being unpatentable over US patent no. 5,583,736 to Andersen et al., in view of US patent no. 7,160,616 to Massler et al., as applied to claims 1-3, 7-10, 12-15, 17, 65-66 and 68-69 above, and further in view of US patent no. 5,352, 493 to Dorfman et al..

Claims 4-6 are dependent upon claim 1, and claims 16, 18 and 20 dependent upon claim 12.

As explained above, Anderson et al. and Massler et al. do not teach or suggest claim 1, and consequently do not teach dependent claims 4-6. Anderson et al. teaches "an electrostatic chuck [which] is faced with a pattern silicon plate 11, created by micro-machining a silicon wafer, which is attached to a metallic baseplate 13." (Abstract). However, Andersen et al. does not teach a coating comprising a diamond-

like carbon material having a carbon-hydrogen network, on a substrate support structure or the advantages obtained from such a combination. Nor does Andersen et al. teach a coating having a contact surface comprising a coefficient of friction of less than about 0.3 and a hardness of at least about 8 GPa. Massler et al. does not make up for the deficiencies of Anderson et al., because Massler et al. teaches a substrate without specifying the nature of the substrate or its application. The Office Action has not demonstrated that there is any motivation to apply the DLC coating taught by Massler et al. to the support structure taught by Anderson et al. especially when Anderson et al. teaches a patterned silicon layer that is much softer than a DLC coating. Thus one of ordinary skill in the art would not substitute the soft silicon coating taught Anderson et al. with the hard diamond like coating taught by Massler et al, to derive the present claims without knowledge from Applicant's own disclosure.

Dorfman et al. does not make up for the deficiencies of Anderson et al. and Massler et al., because Dorfman et al. teaches a method of inhibiting corrosion of the substrate by applying a diamond-like solid-state material on the substrate. (Abstract). From the examples provided by Dorfman et al. in columns 11-14, it appears that Dorfman et al. teaches providing diamond like coatings on metal substrates to prevent their corrosion. However, Dorfman et al. does not teach a coating comprising a diamond-like carbon material having a carbon-hydrogen network, on a substrate support structure. Nor does Dorfman et al. teach a coating having a contact surface comprising a coefficient of friction of less than about 0.3 and a hardness of at least about 8 GPa. Further, Dorfman et al. does not make up for the deficiencies of Massler et al. and Anderson et al., because Dorfman et al. does not provide any motivation to apply a DLC coating to a substrate support structure. Further, it is not obvious that the substitution of the soft silicon coating taught by Anderson et al. by the hard DLC coating taught by Massler et al. or Dorfman et al. would produce a reasonable expectation of success for a substrate support. Applying a diamond like coating with a high hardness to a substrate support structure to obtain a substrate support coating which does not excessively abrade a substrates, is not necessarily proven or suggested by the

combination of Anderson et al., Massler et al. and Dorfman et al.. For these reasons, claim 1 and its dependent claims 4-6 are not obvious over Anderson et al. in view of Massler et al. and Dorfman et al.

Anderson et al. and Massler et al. also do not teach claim 12 or its dependent claims 16, 18 and 20, because Anderson et al. and Massler et al. do not teach or suggest a substrate support comprising a dielectric covering an electrode; and a plurality of mesas on the dielectric, the mesas comprising a coating of a diamond-like carbon material over a titanium layer. Specifically, neither reference teaches or suggest a DLC coating on a support structure comprising a dielectric covering an electrode. Nor do the cited references teach a plurality of mesas on the dielectric, the mesas comprising a coating of a diamond-like carbon material over a titanium layer. Dorfman et al. does not make up for the deficiencies of Massler et al. and Anderson et al., because Dorfman et al. also does not teach or motivate applying a DLC coating to a substrate support structure. Anderson et al. teaches a soft patterned silicon layer on a substrate support, and Massler et al. and Dorfman et al. teach a hard DLC coating but do not teach applying this coating to a substrate support. Further, none of these references teach a substrate support comprising a plurality of mesas on a dielectric, the mesas comprising a coating of a diamond-like carbon material over a titanium layer. Thus the combination of Anderson et al. and Massler et al. and Dorfman et al. do not teach or suggest claim 12 or its dependent claims 16, 18 or 20.

Claims 59-64 and 67 depend upon independent claim 58 which is to a substrate support comprising a support structure comprising (a) a dielectric covering an electrode; (b) a plurality of mesas on the dielectric, the mesas comprising a coating comprising a diamond-like carbon material having a carbon-hydrogen network, the coating having a contact surface comprising a coefficient of friction of less than about 0.3 and a hardness of at least about 8 GPa, whereby the contact surface of the coating is capable of reducing abrasion and contamination of a substrate that contacts the

contact surface; and (c) a metal-containing adhesion layer between the dielectric and the coating of the mesas.

Anderson et al., Massler et al. and Dorfman et al. do not teach or suggest claim 58. Anderson et al. teaches an electrostatic chuck faced with a pattern silicon plate 11, created by micro-machining a silicon wafer, which is attached to a metallic baseplate 13. However, Andersen et al. does not teach a coating comprising a diamond-like carbon material having a carbon-hydrogen network, on a substrate support structure or the advantages obtained from such a combination. Nor does Andersen et al. teach a coating having a contact surface comprising a coefficient of friction of less than about 0.3 and a hardness of at least about 8 GPa. Massler et al. does not make up for the deficiencies of Anderson et al., because Massler et al. teaches a DLC coating on a substrate without specifying the nature of the substrate. Dorfman et al. teaches a method of inhibiting corrosion of the substrate by applying a diamond-like solid-state material on metal substrates to prevent their corrosion. Further, it is not obvious that the substitution of the soft silicon coating taught by Anderson et al. by the hard DLC coating taught by Massler et al. or Dorfman et al. would produce a reasonable expectation of success for a substrate support. For these reasons, claim 58 and its dependent claims are not obvious over Anderson et al. in view of Massler et al. and Dorfman et al..

3. Claim 19 was rejected under 35 USC 103(a) as being unpatentable over US patent no. 5,583,736 to Andersen et al., in view of US patent no. 7,160,616 to Massler et al., as applied to claims 1-3, 7-10, 12-15, 17, 65-66 and 68-69 above, and further in view of US patent no. 5,352, 493 to Dorfman et al..

Claim 19 is dependent upon claim 12, and is not obvious over Anderson et al. in view of Massler et al. and Dorfman et al. for the same reasons as presented above for claim 12. To avoid repetition, these reasons will not be repeated herein, and the Examiner is referred to the arguments provided above.

4. Claim 70-77 and 82-85 are rejected under 35 USC 103(a) as being unpatentable over US patent no. 5,583,736 to Andersen et al., in view of US patent no. 7,160,616 to Massler et al., and US patent no. 5,352, 493 to Dorfman et al..

Claims 70, 74 and 82 are independent claims which contain claim language to a substrate support comprising a dielectric covering an electrode; and a plurality of mesas on the dielectric, the mesas comprising a coating of a diamond-like carbon material over a titanium layer.

Anderson et al. and Massler et al. also do not teach claims 70, 74 or 82, because Anderson et al. and Massler et al. do not teach or suggest a substrate support comprising (a) a dielectric covering an electrode; <u>and</u> (b) a plurality of mesas on the dielectric, the mesas comprising a coating of a diamond-like carbon material over a titanium layer. Specifically, neither reference teaches or suggest a DLC coating on a support structure comprising a dielectric covering an electrode. Nor do the cited references teach a plurality of mesas on the dielectric, the mesas comprising a coating of a diamond-like carbon material over a titanium layer. Dorfman et al. does not make up for the deficiencies of Massler et al. and Anderson et al., because Dorfman et al. also does not teach a DLC coating applied on a substrate support structure. Massler et al. teaches a very hard DLC coating but does not teach applying this coating to a substrate support. Dorfman et al. teaches a diamond like coating applied to metal substrate.

Further, Anderson et al. teaches a soft patterned silicon layer on a substrate support. It is well-known that silicon is much softer than a DLC coating which has much higher hardness values and also has a different coefficient of friction. Thus one of ordinary skill in the art upon learning from Anderson et al., that a patterned silicon coating provides the desirable wear and abrasion resistance properties would not substitute the soft silicon coating with an extremely hard diamond like coating as taught by Massler et al. or Dorfman et al..

Further, none of the references teach a substrate support comprising a plurality of mesas on the dielectric, the mesas comprising a coating of a diamond-like carbon material over a titanium layer. Anderson et al. teaches islands of a soft silicon material. Neither Massler et al. or Dorfman et al. teach or suggest a plurality of mesas on a dielectric support. It is not obvious to substitute soft silicon islands silicon with mesas of a DLC coating having a much higher hardness values. It is further not obvious to apply mesas of a DLC coating to a substrate support comprising a dielectric. For at least these reasons, claims 70, 74, and 82 are not obvious over the cited references.

Claim 70 further recites that the diamond-like carbon material comprising a diamond-like nanocomposite having networks of (i) carbon and hydrogen, and (ii) silicon and oxygen. Anderson et al. and Massler et al. and Dorfman et al. do not teach or suggest a diamond-like carbon material comprising a diamond-like nanocomposite having networks of (i) carbon and hydrogen, and (ii) silicon and oxygen, on a substrate support comprising a dielectric covering an electrode. Dorfman et al. does not teach applying a coating comprising diamond-like nanocomposite on a substrate support, and it is not obvious to substitute the soft silicon islands taught by Anderson et al. with the diamond-like nanocomposite coating taught by Dorfman et al..

Claim 74 further recites that the diamond-like material comprising a metal additive. Anderson et al. and Massler et al. and Dorfman et al. do not teach or suggest a coating for a substrate support which comprises a diamond-like material comprising a metal additive. Nor do they suggest such a coating on mesas on a dielectric covering an electrode, as taught by claim 74. It is also not obvious to derive mesas comprising a coating of diamond-like material comprising a metal additive, on a substrate support comprising a dielectric covering an electrode, from the teachings of Anderson et al. and Massler et al. and Dorfman.

Claim 82 further recites that the diamond-like material is co-deposited with a metal additive by a process combining physical vapor deposition of the metal additive in a plasma enhanced chemical vapor deposition environment. Anderson et al. and Massler et al. and Dorfman et al. do not teach or suggest a diamond-like material that is co-deposited with a metal additive by a process combining physical vapor deposition of the metal additive in a plasma enhanced chemical vapor deposition environment. Nor do these references teach providing mesas comprising a coating of diamond-like material comprising a metal additive on a substrate support comprising a dielectric covering an electrode. Further, the teachings of Anderson et al. and Massler et al. and Dorfman do not motivate derivation of a substrate support comprising a coating of diamond-like material which is co-deposited with a metal additive by a process combining physical vapor deposition of the metal additive in a plasma enhanced chemical vapor deposition environment as claimed.

For these reasons, the combination of Anderson et al. and Massler et al. and Dorfman et al. do not teach or suggest claims 70, 74, and 82 or their dependent claims.

5. Claims 78-81 was rejected under 35 USC 103(a) as being unpatentable over US patent no. 5,583,736 to Andersen et al., in view of US patent no. 7,160,616 to Massler et al., and US patent no. 5,352, 493 to Dorfman et al..

Claim 78 is to a substrate support comprising a dielectric covering an electrode, the dielectric comprising AlN or Al_2O_3; and a plurality of mesas on the dielectric, the mesas comprising a coating of a diamond-like carbon material over a titanium layer.

As explained above, Anderson et al. and Massler et al. do not teach claim 78, or its dependent claims, because Anderson et al. and Massler et al. do not teach or suggest a substrate support comprising a dielectric covering an electrode; <u>and</u> a

plurality of mesas on the dielectric, the mesas comprising a coating of a diamond-like carbon material over a titanium layer. Specifically, neither reference teaches or suggest a DLC coating on a support structure comprising a dielectric covering an electrode. Nor do the cited references teach a plurality of mesas on the dielectric, the mesas comprising a coating of a diamond-like carbon material over a titanium layer. Dorfman et al. does not make up for the deficiencies of Massler et al. and Anderson et al., because Dorfman et al. also does not teach a substrate support structure comprising a DLC coating. Massler et al. does not teach applying a DLC coating on a substrate support comprising a dielectric covering an electrode, and Dorfman et al. teaches a diamond like coating applied to metal substrate which is also not a dielectric covering an electrode.

Anderson et al. teaches a soft patterned silicon layer on a substrate support. It is well-known that silicon is much softer than a DLC coating which has much higher hardness values and also has a different coefficient of friction. Thus one of ordinary skill in the art upon learning from Anderson et al. that a soft silicon coating provides the desirable wear and abrasion resistance properties would not substitute the soft coating with a hard diamond like coating as taught by Massler et al. or Dorfman et al.. Thus Anderson et al., Massler et al. and Dorfman et al. do not teach claim 78.

Further, none of the references teach a substrate support comprising a plurality of mesas on the dielectric, the mesas comprising a coating of a diamond-like carbon material over a titanium layer. Anderson et al. teaches islands of a soft silicon material not a DLC material. Further, neither Massler et al. or Dorfman et al. teach or suggest a plurality of mesas on a dielectric support. It is not obvious to substitute soft silicon islands silicon with mesas of a DLC coating which is much higher. It is also not obvious to apply mesas of a DLC coating to a substrate support comprising a dielectric.

For these reasons, the combination of Anderson et al. and Massler et al. and Dorfman et al. do not teach or suggest claim 78 or its dependent claims.

Should the Examiner have any questions regarding the above remarks, the Examiner is requested to telephone Applicant's representative at the number listed below.

Respectfully submitted,
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Date: December 3rd, 2007

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